व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

स्वच्छ भारत
एक कदम स्वच्छता की ओर

संख्या / No.: Imp. 200/272
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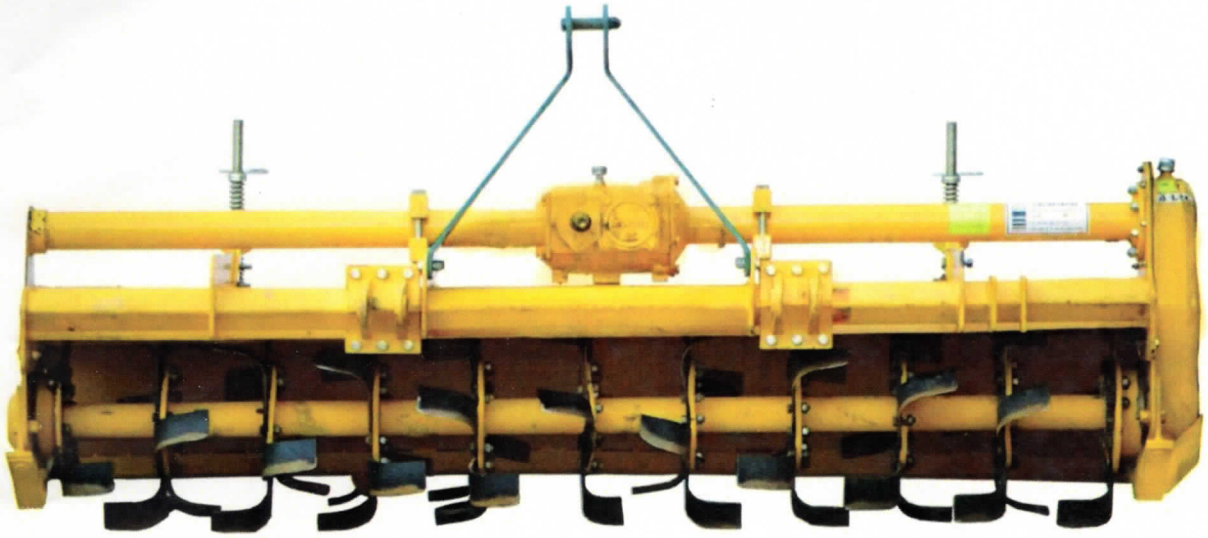

NEW SWAN ROTAVATOR, Model: NSML GT 205 (Gear Drive) (Tractor Operated)

सत्यमेव जयते

भारत सरकार
GOVT OF INDIA
कृषि एवं किसान कल्याण मन्त्रालय
MINISTRY OF AGRICULTURE& FARMERS WELFARE
कृषि, सहकारिता एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE, COOPERATION& FARMERS WELFARE
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1. SCOPE OF TEST

The scope of test was to check and assess the following:

1.1 Laboratory Test:

a) Checking of specifications
b) Hardness of soil engaging parts (Rotavator blades)
c) Chemical analysis of critical components (Rotavator blades)
d) Wear analysis of critical components (Rotavator blades)

1.2 Field Test:

a) Rate of work
b) Quality of work
c) Ease of operation, maintenance and adjustments
d) Labour requirement
e) Defects, Breakdowns & Repairs

2. METHOD OF SELECTION

The implement was directly submitted for test by the applicant at this Institute. Hence, the method of selection is not known.

3. TEST PROCEDURE

The following codes were referred for testing of Rotavator.

i)	IS: 6690-1981 (Reaffirmed in 2012)	:	Specifications of blades for rotavator for power tillers
ii	IS: 4931 – 1995 (Reaffirmed in Mar 2009)	:	Agricultural Tractors-Rear Mounted PTO Shaft (Types 1, 2 & 3)
iii)	IS: 4468 – 1997 (Reaffirmed in Feb 2012)	:	Agricultural Wheeled Tractors- Rear Mounted Three Point Linkage.
iv)	IS: 11531 – 1985 (Reaffirmed in Feb 2011)	:	Test code for puddler

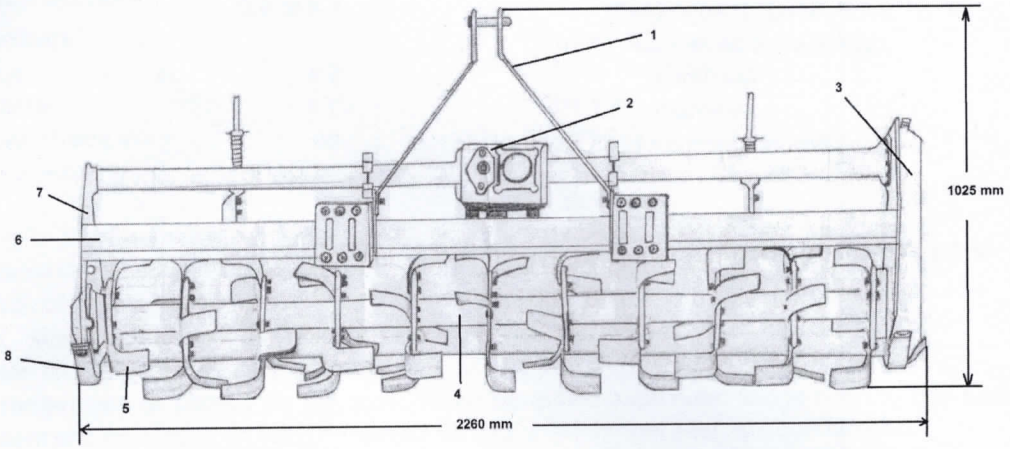
4. SPECIFICATIONS

4.1 General:

Name and address of the manufacturer	:	**M/s. New Swan Multitech Limited.** Village Raian, Kohara-Machiwara Road PO Heeran, Ludhiana-141 112 (Punjab)
Test requested by (Applicant)	:	**M/s. New Swan Multitech Limited.** C-124, Naraina Industrial Area. Phase-I, Road No. 12. New Delhi-110 027
Name of machine	:	Rotavator
Make	:	NEW SWAN
Model	:	NSML GT 205
Type	:	Gear Drive (Tractor Operated)
Size (mm)	:	1970 x 450 Φ

Serial Number of machine	:	NSML0022730
Year of manufacture	:	2016
Country of origin	:	Not Provided
Power Source as recommended	:	Not Provided
Power source used during the test	:	New Holland 7500, Tractor (Refer Annexure-III)

4.2 Constructional Details (Refer Fig.1):



KEYWORDS:			
1.	Hitch pyramid	5.	Rotor blade
2.	Primary reduction gear box	6.	Mainframe
3.	Secondary reduction gear box	7.	Side plate
4.	Rotor shaft	8.	Skid

Fig.1: SCHEMATIC VIEW OF NEW SWAN GT 205 ROTAVATOR

4.2.1 Main Frame:

Constructional Details: It consisted of a square MS pipe of size 2058 x 61.2 x 61.2 mm welded with two nos. of cross member (MS plate) each of size 538 x 165 x 8.4 mm in RHS and LHS respectively. One MS sheet is welded over the rotor unit on the frame (top cover) of size 2058 x 460 (curved) x 3.2 mm. One MS hollow pipe of size 844 x 76.9 Φ mm was fitted to the LHS plate extending from the LHS of the primary reduction gear box. In the RHS of primary reduction gear box one more MS hollow pipe of size 930 × 76.9 Φ mm was welded and extended up to the RHS side plate.

Material	:	MS sheet, MS plate& MS pipe (square)
Dimensions of frame, mm	:	2100 x 538

4.2.2 Side plates:

Number(s)	:	Two
Material	:	MS plate

Dimensions (mm):

- LHS	:	650 x 422 (max.) x 8.8
- RHS	:	430 x 424 (max.) x 8.5

Method of fixing: Both LHS and RHS plate were bolted to the main frame with 4 nos. of bolts each of size having a dimensions 35.1 x 11.7 Φ mm. Depth adjusting skids is bolted on each side plate. Secondary reduction gear box is fitted on the LHS plate.

8. EASE OF OPERATION & ADJUSTMENTS

The operator can easily adjust and control the implement from operator's seat in the field as the adjustments are within the easy reach of operator. However the operator has to get down from the tractor in order to raise/lower the depth adjusting skids. No noticeable difficulty was observed during the operation and adjustment of Rotavator.

9. DEFECTS, BREAKDOWNS AND REPAIRS

9.1 The nuts and bolts which bolted the blade and the flange are found broken and gets lossen frequently.

9.2 After operation of 15.49 progressive hours on dry land, it has been observed that the flange number (from LHS) 2,6,7 & 8 got flexure and after 20.72 progressive hours flange number 3, 5, 9 & 10 also got flexure. Total of Eight flanges got bend during the course of field performance test.

10.SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

10.1 The dimensions of PIC of the rotavator does not conform to IS:4931-1995.This should be looked into for corrective action.

10.2 The dimension of three point linkage, hitch pyramid does not conform to IS: 4468–1997. Therefore, it should be looked into for corrective action for standardization.

10.3 The dimension of the PIC yoke bore does not conform to IS 4931-1995. This should be looked into for corrective action.

10.4 The hardness of blade does not conform to IS: 6690-1981. This should be looked into for corrective action for standardization.

10.5 The rate of work was recorded as 0.425 to 0.587 ha/h with operation speed of 2.46 to 3.33 kmph.

10.6 The depth of operation in dry land was recorded as 10 to 12 cm with soil moisture content of 11.6 to 15.6 % in Sandy soil. The depth of puddle was recorder as 24 to 32 cm.

10.7 The hourly rate of wear of blade on mass basis in Dry land & Wet land operations was recorded as 0.09 to 0.26 % and 0.02 to 0.10 % respectively.

10.8 The hourly rate of wear of blade on dimensional basis in Dry land & Wet land operations was recorded as 0.03 to 0.47 % and 0.03 to 0.21 % respectively.

10.9 Type, model, serial no. and year of manufacture was indicated on the labeling plate. However, it is recommended to specify size and power requirement of the implement.

10.10 The various components of the implement were found inadequate. Therefore it is recommended to looked into for corrective action.

10.11 No ingress of mud and/or water was found in primary and secondary reduction boxes after 41.65 h of Wet land and Dry land operations and the sealing provided on different subassemblies were found effective.

10.12 Technical literature:
No technical literature was provided during the course of testing.

TESTING AUTHORITY

S. G. PAWAR
AGRICULTURAL ENGINEER

K.K. NAGLE
DIRECTOR

Test conducted & Report compiled by - Sh. Rahul Prajapathi & Sh. Vithato Keyho

11. APPLICANT'S COMMENTS

Para no.	Our reference	Applicant's Comments
11.1	10.1	For further production we shall take appropriate action to improve the same as per IS: 4931-1995 in future.
11.2	10.2	For further production we shall take appropriate action to improve the same as per IS: 4468-1997 in future.
11.3	10.3	We shall review the same and ensure it will conform to IS: 4931-1995 in future supplies.
11.4	10.8	Review the same ensure to comply the requirement of the blade as per IS: 6690-1981 in future.
11.5	10.10	We are already working on the same & take appropriate action to improve the same in future.
11.6	10.12	Same is in process & We shall ensure to provide the same for further supplies both technical literature.